

## **ASSESSMENT OF CURRENT POLICIES, PROCEDURES, AND REGULATIONS**

There are numerous regulatory issues that apply to the RIDS program. Emerging policies and regulations are evolving for projects like ASR and surface water withdrawals. The RIDS is on the leading edge of some of these applications, it is appropriate to assess how specific regulations may affect this initiative.

Surface water ASR is currently being evaluated for the Comprehensive Everglades Restoration Program (CERP). There will ultimately need to be a determination made by FDEP on the water quality criteria for the injection of surface water into ASR wells for use. The difference between the degree of treatment to meet Primary and Secondary drinking water quality as defined by the Safe Drinking Water Act and incorporated into FAC 62-550, and the minimum criteria for injection wells, is substantial in terms of costs impacts to the overall program. The USEPA has indicated a willingness to allow recharge water that contains Coliform bacteria for the CERP ASR demonstration program. It may not be unreasonable for them to also consider a water quality criterion that slightly exceeds the primary standards for turbidity as long as fundamentally, the turbidity and resulting particles are not a clogging problem for the wells.

Further, there is the need to allow for natural attenuation of bacteria and other microbiota (viruses and protozoa) within the ASR storage zone such that discrepancies between the Safe Drinking Water Act (SDWA) and the EPA underground injection control program requirements are reconciled. With these water quality issues resolved there is great potential for lower technology processes to meet water quality goals within a more reasonable expectation of costs and complexity of the systems.

In this manner, the main criteria would be turbidity and/or particle size consistent with protection of the ASR well and disinfection to meet a Coliform reduction standard based on daily sampling in which no more than one sample is positive for Total Coliform and no single sample exceeds 4 total Coliforms per 100 mL.

If there is agreement for relaxed treatment requirements for disinfection, wherein the water quality requirements are only to meet a Coliform level of not more than 4 colonies/100mL sample, then the following will suffice:

- A treatment system to meet particulate removals consistent with protecting the injection system (not plugging the well).
- Corrosion control to prevent the injected water causing a corrosive atmosphere to the receiving formation will be sufficient.

However, the concern of disinfecting minimally for Coliforms while preventing Disinfection By-Products remain a concern; therefore, the following methods may be appropriate:

- Bankfiltration systems followed by either a UV disinfection or a low tech solid chemical chlorine/ammonia feed system to provide some limited free chlorine for bacteria and virus inactivation followed by chloramines for further disinfection contact time without a major production of DBPs.

- Slow-sand filtration systems followed by the same level of disinfection as described above (chlorine/ammonia).

The RIDS has assumed the use of bankfiltration systems for source water for ASR in lieu of more costly technologies, such as membranes.

The following presents a collection of regulations that will apply to the RIDS projects:

### **Florida Department of Environmental Protection (FDEP) Regulations**

The FDEP, an agency established by the State of Florida to govern over environmental issues within the State of Florida, has prepared regulations pertaining to water use, reuse, and other relevant aspects of the RIDS project.

#### *Chapter 62-40, FAC – Water Resource Implementation Rule*

Chapter 62-40, FAC, contains FDEP policies on water resources in Florida and establishes a cooperative relationship with the Water Management Districts in water resource issues. Under the general water policy provisions, reclaimed water is specifically identified as an integral part of water management programs. FDEP also encourages the use of water of the lowest acceptable quality for the purpose intended. Under the water use guidelines, it is stated that no water use permit shall be granted by the Water Management District unless the applicant demonstrates a reasonable beneficial use for that water.

#### *Chapters 62-520 & 522, FAC – Ground Water*

The relevant chapters on the subject of ground water focus on protecting the present and future most beneficial uses of ground waters of the state. To ensure their protection, classifications for ground waters of the State have been established. Appropriate water quality designations are outlined in these chapters.

Chapter 62-520, FAC, contains the minimum criteria for ground water and classification descriptions ranging from G-1 (which has the most stringent regulations), to G-IV (the least stringent). This chapter also includes a list of exemptions for each class of ground water.

Chapter 62-522, FAC, discusses ground water monitoring and permitting. This includes recharging aquifers with surface water and reclaimed water ASR. An allowable zone of discharge is expressed for each classification, and monitoring requirements and exemptions are also discussed.

#### *Chapter 62-528, FAC – Underground Injection Control*

The Underground Injection Control Program (UIC) is a delegated federal program authorized under the EPA Safe Drinking Water Act. It is under this program that ASR wells are permitted. All wells included in the RIDS would fall under the Class V category, and would most likely be in Group 7 (Aquifer Storage and Recovery System Wells).

#### *Aquifer Storage and Recovery*

As indicated above, FDEP rules contained in Chapter 62, Section 528 of the Florida Administrative Code (FAC), govern the permitting and operation of ASR wells. Subsection 300 is of special interest in the permitting of surface water and reclaimed water ASR wells. This portion of the regulations deals

with aquifer exemptions. Such exemptions may be needed for certain injection water quality parameters, such as color, which do not meet Secondary Drinking Water Standards. Minor exemptions are fairly straightforward for aquifers, which have total dissolved solids (TDS) concentrations between 3,000 and 10,000 milligrams per liter (mg/L).

### Consumptive Use Permitting

After construction of a viable ASR pilot project and conducting cycle testing, a water use permit for the established system and any planned expansion should be obtained from the District. This may be a modification of any existing permit for a particular utility, or a new permit for either an existing utility or for a new sub-regional entity. The main purpose for obtaining a water use permit for an ASR system is the same as that for obtaining any other water use permit in the State; namely it establishes the prior rights of the permittee to those applicants which may want to use an aquifer in the area in the future.

### Well Construction

Regulations regarding construction and testing of ASR wells are contained in FAC Chapter 62, Section 528. In addition to obtaining an FDEP Class V well construction permit, a well construction permit must also be obtained from the agency that permits wells in a particular jurisdiction. In portions of Lee County, it is the Lee County Water Resources Department. In other parts of Lee County, it is a local government, such as the City of Cape Coral. If those entities are the permittee (i.e., the owner of the well), the District is the permitting agency. A similar situation applies to ASR wells constructed in Collier County.

### *Chapter 62-600, FAC – Wastewater Facilities*

Chapter 62-600, FAC, discusses planning for wastewater facilities design and expansion and goes into some detail discussing minimum treatment standards, disinfection, pH, and other design and operational criteria. It also details the required treatment levels for all types of disposal, including discharge to surface waters, reuse and land application, and disposal by underground injection. It is expected that many of these rules will come into play during the design and construction of the RIDS infrastructure.

### *Chapter 62-604, FAC – Collection Systems and Transmission Facilities*

This chapter imparts information on basic design principles that should be upheld, including details on fencing, siting, and special crossings. A requirement for uninterrupted service and a procedural outline for abnormal events are also included in this chapter.

### *Chapter 62-610, FAC, Part I – Reuse of Reclaimed Water and Land Application*

Reuse is defined as the deliberate application of reclaimed water, in compliance with FDEP and water management district rules, for a beneficial purpose. The first part of this rule provides design, operation, and maintenance criteria for land application systems, surface water discharge projects involving reuse for ground water discharge, indirect potable use, or other beneficial purposes. For all new or expanded reuse or land application projects, a preliminary design report must be submitted to FDEP. Any exceptions to this are noted in this rule.

## **South Florida Water Management District (SFWMD) Regulations**

Formed by Florida State Legislature in 1949, the Central and Southern Florida Flood Control District (FCD) resulted from the need to respond to drought and flood conditions in south Florida. The main responsibility of the FCD through 1972 was to act as local sponsor for the U.S. Army Corps of Engineers construction project.

In accordance with south Florida's changing demand for, and perception of, water resources management, the Florida State Legislature enacted the Water Resources Act in 1972. This act divided the state into five regional districts, naming one of them as the South Florida Water Management District (SFWMD). This act (Chapter 373, Florida Statutes) also greatly expanded the previous responsibilities of the FCD. Watersheds and other natural, hydrologic, and geographic features determine the districts' boundaries.

Today, the District operates and maintains the structures and conveyances built by the FCD. These consist of 1,800 miles of canals and levees, 25 major pumping stations, and about 200 large and 2,000 small water control structures.

The District spans 16 counties and includes vast areas of agricultural lands, water conservation areas, and areas of rapid urban growth and development.

### *Minimum Flows and Levels*

To help determine the amount of water that is available for human use from a particular source, the District must, by act of the Florida Legislature, determine the water body's minimum flow and level (MFL). An MFL is the limit at which further withdrawals will cause significant harm to the water resources of the area and the related natural environment. Lakes and aquifers will have minimum levels set. Minimum flows will be set for rivers and streams. The District uses this information, as well as other information particular to a proposed withdrawal, when determining how much water an applicant may be allowed to withdraw from the water body.

Currently, the only surface water body that falls under the District's Priority List for establishing MFLs is the Caloosahatchee River and Estuary. In this case, a minimum mean monthly flow of 300 cubic feet per second (cfs) has been deemed necessary to maintain sufficient salinities downstream of the Franklin Locks (also known as S-79) in order to prevent a MFL exceedance. A MFL exceedance occurs during a 365-day period, when: (a) a 30-day average salinity concentration exceeds 10 parts per thousand, or (b) a single, daily average salinity exceeds a concentration of 20 parts per thousand. Exceedance of either parameter for two consecutive years is considered a violation.

All Minimum Aquifer Level (MAL) regulations in the Lower West Coast Region apply only to the Lower Tamiami, Sandstone, and mid-Hawthorn aquifers. Decisions on MALs in regard to the water table aquifer are pending. As all proposed ASR systems for the RIDS will be in the Floridan aquifer, these regulations do not apply to this project.

## **U.S. Army Corps of Engineers (ACOE)**

The ACOE regulatory program includes the review of dredge and fill activities in waters of the United States, the construction in navigable waters and the disposal of dredge material in offshore locations. Section 404 of the Clean Water Act requires that permits be received for the deposition of fill in waters

or adjacent wetlands of the United States, the construction of revetments, groynes, levees, dams or weirs, and the placement of riprap. Section 10 of the Rivers and Harbors Act of 1899 requires that permits be obtained for activities that affect navigable waters. The ACOE also has Memoranda of Agreement (MOA) with other federal agencies such as the U.S. Fish and Wildlife Service (FWS) and the U.S. Department of Environmental Protection. These agreements allow for the agencies to provide input during the review process on issues such as federally listed wildlife species and wetland impacts associated with the projects under review. In determining whether to issue a permit, the ACOE must also comply with other requirements, including Section 7 of the Endangered Species Act of 1973 (50 CFR Part 402), the National Environmental Policy Act of 1969, the Coastal Zone Management Act, the Fish and Wildlife Coordination Act and other applicable federal laws.

Illustrated in Table 19 are the possible constraints by federal and state regulations broken down by RIDS alternative.

**Table 19**  
**Regulatory Constraints by Alternative**

<b>Source</b>	<b>Regulatory Agency</b>	<b>Constraint</b>
<i><b>Surface Water</b></i>	FDEP	Safe Drinking Water Act – Disinfection Byproducts (DBPs), Surface Water Treatment Rules, Primary and Secondary Drinking Water Standards; Permitting and Construction of Public Water System; Regulation of Wells
	SFWMD	Water Use Permit (WUP) Minimum Flows and Levels (MFLs) Reservations
<i><b>Surface Water ASR</b></i>	FDEP	Safe Drinking Water Act – Disinfection Byproducts (DBPs), Surface Water Treatment Rules, Primary and Secondary Drinking Water Standards; Permitting and Construction of Public Water System; Regulation of Wells; Underground Injection Control (UIC)
	SFWMD	WUP MFLs Reservations
<i><b>Reclaimed Water</b></i>	FDEP	Wastewater Facilities, Collection Systems and Transmission Facilities, Reuse of Reclaimed Water and Land Application
<i><b>Reclaimed Water ASR</b></i>	FDEP	Wastewater Facilities, Collection Systems and Transmission Facilities, Reuse of Reclaimed Water and Land Application, Primary and Secondary Drinking Water Standards, Regulation of Wells, UIC
	SFWMD	WUP

## **Collier County Regulations**

Collier County is at the forefront of Florida municipalities in incorporating reclaimed infrastructure in new developments as well as retrofitting existing neighborhoods. Collier County is also among the first in the state to incorporate reclaimed water ASR into their capital improvements list. In addition, the Big Cypress Basin is an integral part of improving and maintaining the delicate water balance in this region of the state.

Collier County's Municipal Code, Section 3.8.2.3.25, states that a complete water distribution and transmission system to include provisions for separate potable and reuse water lines for all subdivisions and developments.

For other information on Collier County regulations, refer to the Collier County Municipal Code, Big Cypress Basin Board documents, SFWMD, and FDEP regulations.

## **Big Cypress Basin**

Further definition of water management roles were established in 1976 as a result of a legislative amendment resulting in the establishment of two basin boards within the newly named South Florida Water Management District. The basins were named the Okeechobee Basin and the Big Cypress Basin.

The Big Cypress Basin (BCB) was officially created on January 1, 1977. The Big Cypress Basin Board presently has responsibility for operation, maintenance, and providing planning and capital improvements to 163 miles of primary canals and 40 water control structures. The BCB encompasses the portion of the RIDS that is located in Collier County.

BCB has the following programs:

### *Water Management Planning*

The Basin is responsible for preparing engineering plans for the development of water resources within the basin.

### *Restoration Projects*

The Basin is currently working on three major restoration projects. The Southern Golden Gate Estates Hydrologic Restoration is slated for funding under the CERP. The Lake Trafford and Tamiami Trail Flow Enhancement projects are being sponsored by a cooperative agreement with the ACOE under the funding initiative of the Water Resources Development Act of 1996.

### *Hydromonitoring*

The Basin maintains an extensive monitoring network of rainfall, evaporation, surface and ground water levels, streamflow, and water quality.

### *Construction*

The Basin's construction program facilitates and enhances the water resources within the region. Construction projects include retrofitting existing structures as well as new construction.

### *Operation and Maintenance*

Maintenance work in the canals, involve shoal and debris removal, control of aquatic and terrestrial vegetation. Operation and maintenance of water control structures involves routine maintenance and timely operation of structures. Administration of canal right-of-way permits is coordinated under this program.

## **Lee County Regulations**

Lee County does not have a basin board; therefore the majority of water rules and regulations are determined by the District, FDEP, or federal rules. However, Lee County is proactive in that both existing and new developments must use reclaimed water for irrigation over potable wherever feasible and within the utility service area.

### *Lee County Municipal Code, Sec. 10-354 -Reuse Water System*

This portion of the Municipal Code states that, wherever feasible, the irrigation of grassed or landscaped areas must be provided for through the use of a second water distribution system supplying treated wastewater effluent or reuse water. All proposed developments should be designed to maximize the use of reclaimed water whether located in the utility service area or from an on-site wastewater treatment facility.

For other information on Lee County regulations, refer to the Lee County Municipal Code, SFWMD, and FDEP regulations.